

## Description of the first apterous genus of Sciomyzidae (Diptera), from Nepal

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**Description of the first apterous genus of Sciomyzidae (Diptera), from Nepal.** - *Apteromicra* gen. n. (type species *A. parva* sp. n.) is described and illustrated from Nepal. This is the first known apterous species within Sciomyzidae, its systematic position is discussed in detail.

**Key-words:** Diptera - Sciomyzidae - Sciomyzini - *Apteromicra* - taxonomy - apterous flies - Nepal.

### INTRODUCTION

Reduction and loss of wings among the dipterous flies are rather common and those species have always provoked interest among dipterists. Hackman (1964) referred to aptery as "...known from more than 20 dipterous families" but since then such reduced-winged or apterous species have been discovered in additional families [e.g. Drosophilidae, Papp (1979)]. When discussing the environments in which short-winged or apterous Diptera are found, Hackman (1964) referred principally to high altitude Diptera. Other environments (and congruent Diptera groups) are: Diptera in arctic, subarctic and subantarctic mainland habitats; nival Diptera; Diptera of oceanic islands; Diptera on sea shores; marine Diptera; Diptera in various terricolous and hypogeous habitats; Diptera in nests of Hymenoptera and termites; and parasites on warm-blooded animals.

In the course of my visit to the Muséum d'histoire naturelle Genève in 1986 I found a small apterous fly among extensive collections, which coleopterists of the museum had made by sieving and subsequent funnelling in the Oriental region. I borrowed that fly but it was untouched for years. When I decided to study it early in 2002, immediately I found it peculiar, and its family relegation questionable, although it is obviously an "acalyptate" fly.

Keys to families of adult Diptera employ characteristics of wings extensively. Consequently, reduced-winged or apterous flies have to be dealt with separately. In the key for the Palaearctic Diptera families, Papp & Schumann (2000) keyed 23 families of those flies in the last part of the key. Among the 23 families there are only six families of the "acalyptates". Our fly does not belong to any of them. I also failed to

identify it to a family with the aid of general or regional keys. Of course, the reason is rather simple: all of those keys are for families where wing reduction already has been known. I had to use only body characteristics other than those of wings to judge its relegation among higher flies. My conclusion was that this small fly is the first apterous representative of the family Sciomyzidae.

The type specimen is deposited in the Muséum d'histoire naturelle Genève, Switzerland (MHNG).

## TAXONOMY

### *Apteromicra* gen. n.

Type species: *Apteromicra parva* sp. n.

*Diagnosis.* Small apterous species with extremely long dorsal pre-apical setae on each tibia (Fig. 1) and with extremely long postocellar seta.

Frons only slightly narrowed apically. Face nearly straight in lateral view, eyes ovoid. No fronto-orbital spot. Ptilinal suture normal (slightly open with a herniated part of ptilinal sack on the holotype of the only known species). Genal height 0.24 mm, height of eye 0.30 mm, ratio 0.815. Two pairs of latero- and reclinate fronto-orbitals: anterior pair almost completely laterocline, posterior pair's direction is less than 45° to the longitudinal body axis. Short fronto-orbital setulae from medial vertical seta to antennal bases: 1 + 2 + 3 (1 short fronto-orbital between medial vertical and posterior fronto-orbital; 2 setulae between the two fronto-orbitals and 3 setulae between anterior fronto-orbital and antennal base). No true interfrontal setulae, 8 frontal setulae anterior to anterior fronto-orbital seta. Midfrontal area anterior to ocelli not separable from other parts of frons and bare. Postocellar pair extremely long, slightly divergent, in occipital position. No vibrissa. Clypeus narrowly U-shaped, not concealed but small and broadly separated from other sclerotized parts of head. Proboscis medium long, not strongly sclerotized (proboscis not folded).

Thorax much reduced in volume, probably not more than the volume of head, since definitely narrower than head. Both pro- and metathorax relatively enlarged, probably due to the loss of wings, and proportional reduction of mesothorax. Mesonotal suture present as a black line from behind posterior notopleural seta (from level of posterior margin of anepisternum) as far as medially to presutural seta; metapleural callus weak but discernible. Prosternum subtriangular, bridging the proepisterna. Pro-episternum with a medium long pro-episternal seta above the base of fore coxa. Anepisternum and anepimeron separated by a membranous area. Posterior spiracle behind level of postalar seta. One shorter postpronotal, 2 notopleural, an extremely strong presutural, 2 pairs of dorsocentral and 1 pair of probably strong postalar setae (postalar broken off on both sides on the holotype but on its right side also a setal base of a supra-alar is discernible). Two pairs of scutellars, apical pair dorsally directed and cruciate (Fig. 1), basal pair is very long and is in lateral position. A distinct pro-epimeral seta and a large katapisternal present, otherwise pleura bare.

Hind coxa bare posterodorsally. Mid and hind femora each with a large antero-dorsal seta at apical 5/6. All tibiae with very long dorsal preapicals, mid tibia with 1 anterior and posterior short apical each and 2 large thick ventroapical pairs.

Wings reduced to minute processes (tegula), this tegula with 1 minute setula.

Abdominal spiracles 2-5 in membrane (Fig. 1). Female postabdomen simple (Figs 3-4). Terga and sterna 7 and 8 are small but not telescoped. Epiproct and hypoproct are small, cerci normal without any peculiar armature. Two pairs of globular spermathecae (Fig. 5).

*Etymology.* The new genus does not belong to the close relatives of *Pteromicra*. Its apterous state and its relegation to the Sciomyzini are the reasons why I name it so.

*Discussion.* Of course, one may question the relegation of this wingless fly to the family Sciomyzidae. If this is a sciomyzid, its pro-episternal seta designates its position definitely as a member of the tribe Sciomyzini. However, this seta is reduced in two genera of Sciomyzini (*Atrichomelina* Cresson and *Pseudomelina* Malloch) and distinctly present in three genera of Tetanocerini (*Eutrichomelina* Steyskal, *Perilimnia* Baker, and *Shannonia* Malloch). Nearly the full complement of head and thoracic setae found in most plesiomorphous Sciomyzidae are present in this species. The presence of long and thick pre-apical dorsal setae on all tibiae, which might be shorter in the ancestor, reduces strongly the possible number of the families, where it may belong to. Again, it has no vibrissal angle or vibrissae, which character excludes a number of families with strong dorsal preapicals on the tibiae. The shape of the prosternum (abridging the pro-episterna) and the 2 globular spermathecae seem to be strong synapomorphies, when searching for its true relatives. The male genitalia would have provided more evidence. However, the female postabdomen (Figs 3-4) does not show any true differences from that of the Sciomyzidae (cf. e.g. Rozkošný, 1998: fig. 35.36 for *Tetanocera*): characteristics of the postabdomen exclude a relationship to the Tephritoidea (with their ovipositor) and to a number of families (or even superfamilies), where the postabdomen is telescoped. Contrary to the Heleomyzoidea (and allies, like the Chyromyidae), vibrissae are absent. In any case, it falls into the group with strong dorsal preapicals on the tibiae and without vibrissae. Contrary to the Dryomyzidae and allies (where the clypeus is large and prominent), its clypeus is narrowly U-shaped, small and broadly separated from the other sclerotized parts. Unlike Lauxaniidae, the postocellar setae are divergent and *Apteromicra* has only two spermathecae instead of three or four as in the Lauxaniidae).

*Diagnostic remarks.* There are only two genera of Sciomyzini known in the Oriental region, *Pherbellia* Robineau-Desvoidy and *Pteromicra* Lioy. None of them is closely related to the new genus (cf. Rozkošný & Knutson, 1970). In the key Rozkošný (1998) published for the Palaearctic genera, one cannot find a closely related genus. *Sciomyza* Fallén with its double pre-apical setae on fore tibia (exception *S. sebezica* Przhiboro, 2001), *Ditaeniella* Sack with its single fronto-orbital pair, haired prosternum and setulose anepisternum cannot be close relatives. The structure and armature of head of *Colobaea* Zetterstedt are strikingly different. I think the strength and position (direction) of the anterior fronto-orbital, the arrangement of setae on the mesonotum and also the direction of the apical scutellars are features, which will be distinctive for this fly as a genus even after further studies and morphological comparisons.

This discovery of an apterous Sciomyzidae suggests that, although few sciomyzids have been found in pitfall traps, such collections may indeed produce other new species of apterous Sciomyzidae.

*Apteromicra parva* sp. n.

Figs 1-5

*Holotype female* (MHNG): Nepal, W Thorong Pass, 4450-4350 m, sous les pierres [= under stones], 29. IX. 1983, leg. I. Löbl & A. Smetana, No. 19.

*Remarks.* The specimen was kept in 70 % ethanol for 20 years. I judge the loss of colours rather moderate. The postabdomen was removed and treated with 10 % sodium-hydroxide. After washing in water and alcohol, it was placed in a plastic microvial with glycerine. This microvial contains also the spermathecae, which were removed from the abdomen during the preparation. The specimen itself is still preserved in alcohol.

*Description.* Body length 2.37 mm, length of head 0.385 mm, length of thorax 0.51 mm.

Body dark grey, head greyish yellow, legs black, lateral part of abdominal sclerites light.

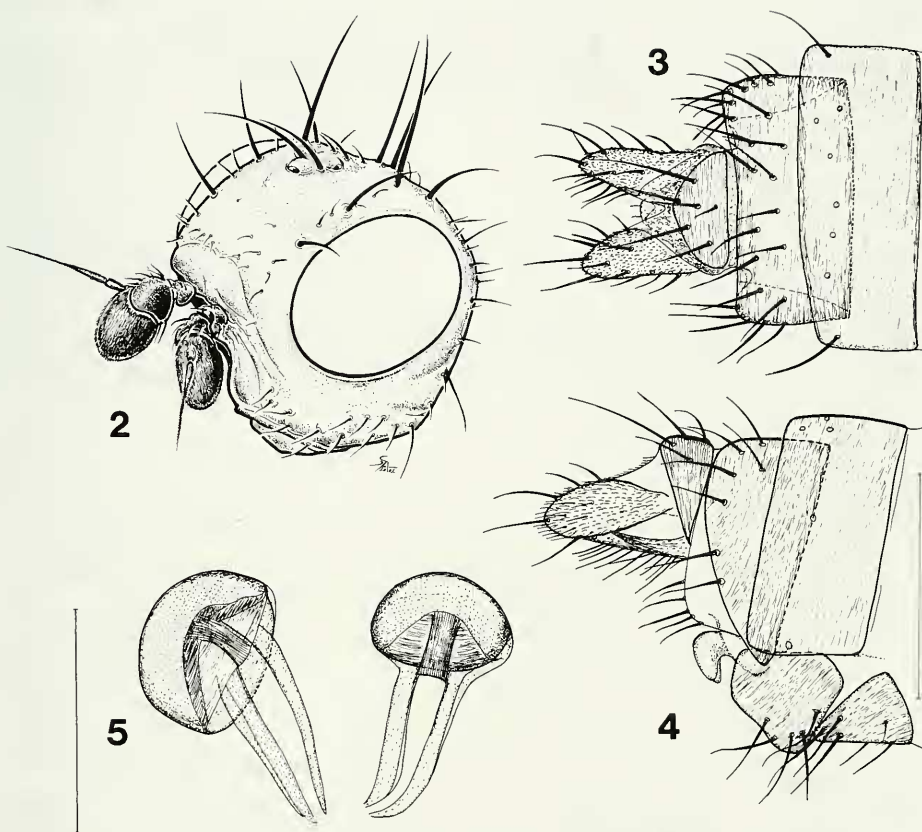
Head as described in generic diagnosis, but in addition: 3 pairs of setulae between ocellar and postocellar; postgena with 2 pairs of long setae. Facial plate (prae-frons) comparatively narrow, less broad than both cheeks. No vibrissa, genal bristles not well arranged, 1 peristomal row of ca. 7 pairs (back to the postgenal seta) plus other 6 genal setulae more dorsally on gena. Antennae black, decumbent (Fig. 2). Scape reduced to a short ring with minute setulae. Pedicel 0.06 mm long dorsally, with short setulae only. First flagellomere longer than high, broadly rounded apically. Arista sub-basal, 0.3 mm long, with minute dark cilia. Basal aristomere very short, hardly discernible, second aristomere short, as broad as basal 1/3 of third aristomere. Palpus yellowish, normal, i.e. not thickened, with 1 long subapical ventral seta and other 5



FIG. 1

*Apteromicra parva* sp. n., holotype female (del. A. Szapannos)





FIGS 2-5

*Apteromicra parva* sp. n., holotype female. 2, head, semilateral view (del. A. Szapannos). 3, postabdomen, dorsal view. 4, same, lateral view. 5, spermathecae (drawn in water). Scale bars: 0.1 mm (Fig. 5), 0.2 mm (Figs 3-4).

shorter setulae. The specimen has the ptilinium partly exposed (most probably an individual abnormality, depicted also on Figs 1-2).

Thorax dark grey, wholly microtomentose. Prosternum bare. Mesonotal setulae not arranged, 1 short intra-alar setula lateral to dorsocentral line, other short setulae on presutural mesonotum: 1 beside postpronotal, ca. 9 within the dorsocentral lines and 5 lateral to that lines. Notopleura and prescutellar area bare.

Pre-apical seta on hind tibia 0.17 mm long, anterodorsal seta on hind femur 0.19 mm.

Abdominal setae mostly broken off on the holotype but marginal setae are not particularly strong (not much longer than discal ones). Abdominal spiracles 2-5 in membrane. Setae on epiproct asymmetrically placed. Hypoproct covered by dense short setulae. Cerci of normal size, simple, without any longer setulae (Fig. 3). Also a

pair of internal sclerites present, supporting gonopore at their mesal ends [these are probably the subgenital sclerites of Rivoecchi (1992)]. Two spermathecae (Fig. 5); they are unequal in size, both are globular, central part involuted even in water (when functioning, probably their shape is actually globular). Spermathecal duct thick, thick-walled but not sclerotized (pigmented).

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